Evaluation of Methods to Increase Light Under Large Overwater Structures

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Abstract

To address resource agency concerns about potential impacts of ferry terminal expansion on habitat functions and resource use of nearshore areas, the Pacific Northwest National Laboratory, in partnership with the Washington State Department of Transportation, conducted field trials with several products that promote light passage through dock structures. Photosynthetically active radiation (PAR) measurements were compared with known minimum requirements for survival of eelgrass, *Zostera marina,* which provides critical habitat for the federally listed chinook salmon, Oncorhynchus tshawytscha. PAR measurements were also related to what is known about the effects of light on juvenile salmonid feeding and passage under overwater structures. In general, the products predicted to provide the most to the least light were the grating, SunTunnel, metal halide greenhouse light, and prisms. All the light technologies tested could provide enough light for eelgrass underneath a ferry terminal, though multiples of some devices would be required. Because less light is required for fish to feed than for photosynthesis, any of the products would provide enough light for juvenile salmon to feed under the structure. The number and placement of these devices could be arranged to maximize light penetration for particular purposes in different situations.